Fields of Time

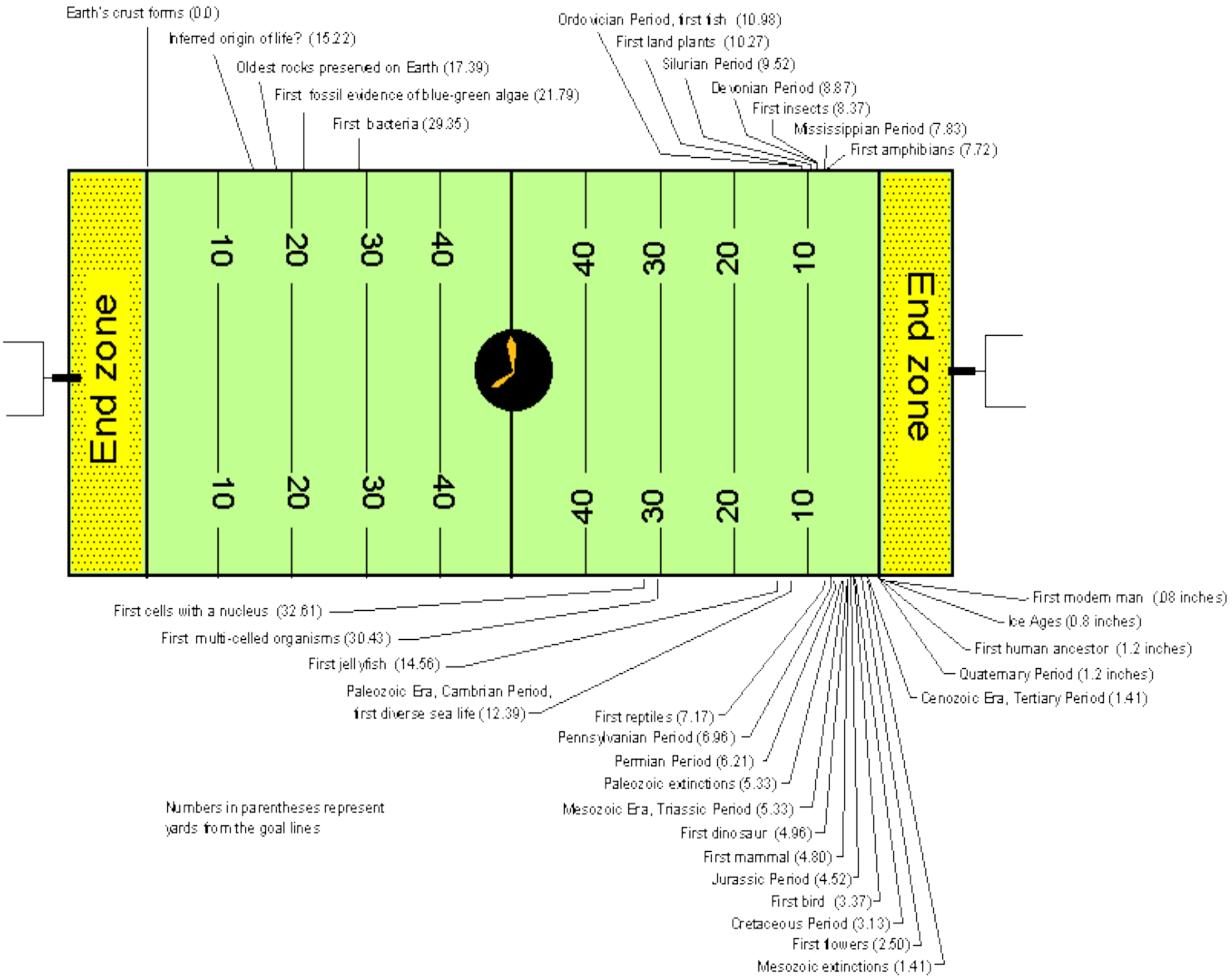
An exercise assembled by Dr. Stephen Greb, Kentucky Geological Survey to demonstrate changes in the Earth through time, and the length of time it took to make many of the changes.

Materials

- A football or soccer field
- Paper, colored pencils or crayons, or other materials to draw or make costumes of ancient animals and plants

Activity

Constructing time lines is a common method for demonstrating changes in Earth history. But these demonstrations don't have to be limited to lengths of adding machine paper. You can get across the same principles on a football field. In fact, the concept of the expanse of time between events can sometimes be better shown on a football field, just because it is so much larger than a length of paper. Of course, its also more fun to be outside than in the classroom. Rather than drawing objects or moments of time on a piece of paper, the students can be active members of the time lines themselves.



Click here to get gif image of above field that can be printed at page size.

Before bringing the students out onto the court or field, pick the events you want your class to use from the list of important dates in Earth history below. The teacher can calculate the distance for each key event, or have the students calculate the distance in class, or as part of a homework assignment prior to going onto the court or field. As with the time lines on paper, you have to decide how much time you want to demonstrate on the court or field. The advantage of showing all of geologic time is that most of the students will be clustered toward one end of the field or court, and they can see how far away the student representing the beginning of the Earth is standing. For example, on a football field, the student representing the Earth's first birthday is at one goal line, but the student representing the first abundant life (at the beginning of the Paleozoic Era) is standing near the 12 yard line, at the opposite end of the field. This is an excellent way to show how long it took these life forms to develop, as most of the students will be clustered within the ten yard line of one goal line, and only a few students will occupy the rest of the field. If you would rather stress how long it took the more familiar life forms to develop, use only the last 570 million years of Earth history, since the beginning of the Paleozoic Era. Times and distances for both the 4.6 billion year time fields and 570 million year time fields are provided below.

To make the time fields exciting for the students, assign each a key date in Earth history a day or two before going outside. Let each student go to the library or provide information about the key date so that they can make a mask, or write a short limerick about their key event. For example, if a student was assigned blue-green algae, they might say "I'm blue-green algae, not much more than slime, but I ruled the Earth for a very long time!" For a mask they might make a headdress that looked like sea weed, or drape themselves in green streamers. This will let each student use their own creativity to illustrate the concept of changes in time.

On the Field:

To show all 4,600 my of time,	To show only 570 my of time,
1 yard = 46 my (million years)	1 yard = 5.7 my (million years)
Goal Line = 4,600 my	Goal line = 570 my
10 yard line = 4,140 my	10 yard line = 513 my
20 yard line = 3,680 my	20 yard line = 456 my
30 yard line = 3,220 my	30 yard line = 399 my
40 yard line = 2,760 my	40 yard line = 342 my
50 yard line = 2,300 my	50 yard line = 285 my
40 yard line = 1,840 my	40 yard line = 228 my
30 yard line = 1,380 my	30 yard line = 171 my
20 yard line = 920 my	20 yard line = 114 my
12.4 yard line = 570 my (start of the Paleozoic Era)	
10 yard line = 460 my	10 yard line = 57 my
Goal line = today	Goal line = today